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## THE GENUS GALINSOGA IN NORTH AMERICA.

HAROLD ST. JOHN AND DONALD WHITE.

IN his studies of the "Ferns and Flowering Plants of Nantucket,"<sup>1</sup> E. P. Bicknell has raised to specific rank, as *Galinsoga aristulata* Bicknell, the plant that had previously passed as *G. parviflora* Cav., var. *hispida* DC. This variety is distinguished from the species *G. parviflora* in the 7th edition of Gray's Manual<sup>2</sup> on having "Pubescence more copious, not appressed; pappus-scales of the disc-flowers attenuate and bristle-tipped." As Bicknell points out, the name *hispida* cannot be used for the plant in the specific category because of the earlier *G. hispida* Benth. He draws contrasts between the plant under consideration and various species in this and related genera, but his only comparison between it and the very closely related *G. parviflora* is, "This now widespread weed wherever I have met with it has not failed to prove itself always readily distinguishable from the true *G. parviflora* Cav., even without reference to the constant and pronounced differences in the pappus scales." If the plant does differ from its relative in a constant and pronounced character of the pappus-scales, as well as in vegetative characters, it would be reasonable to treat it as a species. The writers became interested in this question, and have endeavored to verify the point. As is very often the case, this small question led on to the larger one, of checking and evaluating the characters used to separate the species of the genus. We found that obvious and constant characters existed, especially in the pappus of the ray- and disc-flowers, and we

<sup>1</sup> Bicknell, E. P. Bull. Torr. Bot. Cl. xliii. 270 (1916).

<sup>2</sup> Robinson, B. L., and Fernald, M. L. Gray's Man. ed. 7. 843 (1908)

feel that these constant floral differences should be used as the primary characters in distinguishing the species. We present a synopsis of the North American species as we understand them. With these is included one Bolivian species not heretofore recognized.

#### KEY TO THE SPECIES.

- A. Ray-flowers purple or roseate-purple.
- B. Disc- and ray-flowers both purple; achene of ray-flower glabrous or nearly so, its pappus of a few bristles; leaves short, entire, petioled, narrowly deltoid-lanceolate; stem subsimple, strict, the internodes elongate.....1. *G. purpurea* St. John & White.
- B'. Disc-flowers yellow; pappus of ray-flowers of linear-lanceolate fimbriate scales; leaves slender-petioled, coarsely serrate, ovate or ovate-lanceolate; stems freely branching.
- C. Pappus of disc-flowers of linear-lanceolate fimbriate scales half the length of the corolla, corolla exceeding the achene; ligule oblong, 3-toothed at apex, its tube exceeding the linear fimbriate pappus-scale, the achene of the ray-flower glabrate or hispidulous on one side.....2. *G. caracasana* (DC.) Sch. Bip.
- C'. Pappus of disc-flowers firm, linear, fimbriate, long-aristate, equalling the corolla, disc-corolla barely equalling its achene; ligule tripartite, the two lateral lobes widely divergent, tube of ray-flower very broad, shorter than the glabrate or hispid achene and shorter than the linear minutely fimbriate aristate pappus-scale.  
3. *G. bicolorata* St. John & White.
- A'. Ray-flowers yellowish or whitish.
- D. Pappus of disc-flowers aristate, fimbriate, equalling or nearly equalling the corolla; pappus of ray-flowers of linear minutely fimbriate scales equalling the tube of the flower, achene of ray-flowers densely hispid on the inner face; leaves ovate or ovate-lanceolate, coarsely serrate; stems at the nodes and the peduncles with a coarse spreading white often glandular hispidity....4. *G. aristulata* Bicknell.
- D'. Pappus of disc-flowers not aristate; pappus of ray-flowers wanting or a few bristles, their achenes glabrous or minutely pilose on one side.
- E. Pappus of disc-flowers linear-lanceolate, conspicuously fimbriate, equalling or even exceeding the corollas; pappus of ray-flowers wanting, the achenes glabrous or somewhat pilose at summit; a freely branching plant with slender-petioled ovate-lanceolate coarsely or bluntly serrate leaves; peduncles and stems near the nodes clothed with a fine appressed rarely glandular pilosity.  
5. *G. parviflora* Cav.
- E'. Pappus of disc-flowers linear, fimbriate, two-thirds the length of the corolla-tube; pappus of ray-flowers of a few short white bristles or wanting, the achenes minutely hispidulous at summit or glabrate; a strict plant rarely branching from the base; the internodes elongate; the leaves short-petioled, linear-lanceolate or narrowly deltoid-lanceolate, bluntly serrate to subentire; pedicels and nodes of the stem with a coarse partly appressed puberulence.  
6. *G. semicalva* (Gray) St. John & White.

1. **GALINSOGA purpurea** sp. nov. annua tenuis, 1-2.5 dm. alta; caulibus subsimplicibus, sparse hispidis, internodiis elongatis; foliis oppositis anguste deltoideo-lanceolatis breviter hispidis integris breviter petiolatis 1-2 cm. longis, 1.5-5 mm. latis; pedicellis hispidis; capitulis

pedicellatis globosis parvis 3–4 mm. altis, 2.5–3.5 mm. diametro, squamis 4–5 ovatis glabris scariosis flavo-viridibus, receptaculo conico, paleis pallidis linearibus anguste bidentatis; floribus radiatis femineis purpureis ca. 4, ligulis brevibus oblongis tridentatis, tubis pilosis, achaeniis oblanceolato-ovoideis, pappi squamis parvis; floribus disci hermaphroditis purpureis, tubis infundibuliformibus achaenia aequantibus, achaeniis deltoideo-obovoideis hispidis, pappi squamis lineari-lanceolatis fimbriatis attenuatis vel aristatis dimidiis vel bessibus longitudinis tubarum corollarum.

A slender annual, 1–2.5 dm. tall: stem nearly simple, sparsely hispid; leaves opposite, short-hispid, narrowly deltoid-lanceolate, short-petioled, 1–2 cm. long, 1.5–5 mm. broad: pedicels hispid: flower heads pedicelled, small, 3–4 mm. high, 2.5–3.5 mm. in diameter; involueral scales 4–5, ovate, glabrous, scarios, yellowish-green; receptacle conical; chaff pale, linear, narrowly bidentate; ray-flowers pistillate, about 4 to a head, the ligules purple, short, oblong, 3-toothed, the corolla-tube pilose, the achenes oblanceolate-ovoid, pappus of a few bristles; disc-flowers perfect, the tube purple, funnel-shaped, as long as the achenes, achenes deltoid-obovoid, hispid, pappus-scales linear-lanceolate, attenuate or aristate-fimbriate, half or two-thirds the length of the corolla-tube.

BOLIVIA: Bolivian Planteau, 1891; *Miguel Bang*, no. 1,148 (TYPE in Gray Herb.).

2. *G. CARACASANA* (DC.) Sch. Bip., *Linnaea* xxxiv, 529 (1865–6). *Vargasia Caracasana* DC., *Prodr.* v. 676 (1836).

Native of South and Central America, introduced into eastern North America and established especially near the larger cities. *C. F. Parker* found it at Camden, New Jersey, as early as 1870.

3. *G. bicolorata* sp. nov. annua ramosa, 2–3 dm. alta; caulibus hispidis infra glabratis, nodis superioribus valde hispidis; foliis oppositis petiolatis lanceolato-cordatis breviter caudatis grosse obtuse-que serratis hispidis, 1.5–4 cm. longis, 4–35 mm. latis; pedunculis glanduloso-pilosis; capitulis hemisphaericis, 3–4 mm. altis, 3–5 mm. diametro, squamis exterioribus sparse glanduloso-pilosis, receptaculo conico, paleis pallide bruneis linearibus minute ciliatis; floribus radiatis femineis purpureis, corollis achaenia aequantibus vel vix superantibus, ligulis tridentatis cruciformibus dentibus lateralibus valde divergentibus, tubis latis pilosis, achaeniis obdeltoideis angulatis hispidis, 2 mm. longis, pappi squamis firmis albidis tubum corollae superantibus linearibus longe aristatis fimbriatis; floribus disci hermaphroditis, tubis flavis achaenia superantibus, pappi squamis firmis albidis linearibus fimbriatis longe aristatis tubum corollae aequantibus vel paulo superantibus, achaeniis obdeltoideis 1.5–2 mm. longis hispidis.

A branching annual, 2–3 dm. tall: stem glabrate below, hispid at the nodes and strongly so above: leaves opposite, petioled, hispid,

lanceolate-cordate, short-caudate, coarsely and bluntly serrate, 1.5–4 cm. long, 4–35 mm. broad: peduncles glandular-pilose: heads hemispherical, 3–4 mm. high, 3–5 mm. in diameter; outer involucre bracts sparsely glandular-pilose; receptacle conical; chaff pale brown, linear, minutely ciliate; ray-flowers pistillate, purple, equalling or slightly exceeding their achenes, ligule 3-toothed, cruciform, the lateral teeth widely divergent, corolla-tube broad, pilose, achene obdeltoid, angular, hispid, 2 mm. long, pappus firm, white, longer than the corolla-tube, linear, fimbriate and long-aristate; disc-flowers perfect, corolla yellow, the tube exceeding the achene, pappus firm, white, linear, and long-aristate, equalling or slightly exceeding the corolla-tube, achenes obdeltoid, hispid, 1.5–2 mm. long.

MEXICO: altitude 4000–5500 feet, Tumbala, Chiapas, Oct. 20, 1895, *E. W. Nelson*, no. 3,356 (TYPE in Gray Herb.). COSTA RICA: altitude 4,250 feet, Cartago, Prov. Cartago, Oct., 1887, *Juan J. Cooper*, no. 5,815, in part; altitude 1,500 m., San Rafael de Cartago, Aug. 28, 1892, *H. Pittier*, no. 6,989.

Recently introduced in eastern North America. MASSACHUSETTS: shore of Charles River between Mass. Ave. and Anderson Bridge, Cambridge, Sept. 26, 1916, *F. S. Collins*, no. 3,797.

4. *G. ARISTULATA* Bicknell, Bull. Torr. Bot. Cl. xliii. 270 (1916). *G. parviflora* Cav.,  $\gamma$ . *hispidula* DC., Prodr. v. 677 (1836), not *G. hispidula* Benth.

Native of South and Central America, introduced and becoming very common in the eastern United States. In 1866 it was found by Joseph Blake at Gilmanton, New Hampshire.

5. *G. PARVIFLORA* Cav., Icon. Descr. Pl. iii. 41, t. 281 (1795).

Native of South and Central America, and Mexico, introduced in the United States, where it is casual, especially near the larger cities, from the Atlantic to the Pacific coast. Dr. Gray in his Manual ed. 2, 225 (1856) reports the plant on waste places at Cambridge, New York, and Philadelphia.

6. *G. semicalva* (Gray) comb. nov. *G. parviflora* Cav., var. *semicalva* Gray, Pl. Wrightianae ii. 98 (1853). This native species of the mountains of northern Mexico and the southwestern states was first collected by Charles Wright in 1851, and described by Asa Gray as a variety of *G. parviflora*. Wright's no. 1,268, the type of var. *semicalva* has, as Gray pointed out, the ray achenes glabrous and lacking pappus. Wright's no. 1,267, collected in the same region, has the ray-achenes "slightly hairy near the summit, and furnished with a very small setiform pappus." This collection Gray identified with *G. caracasana*, a purple-flowered species. Wright's no. 1,267 does not appear to have purple rays. Its natural affinity seems to the writers to be with *G. semicalva*, the slender native species of that region. An inspection of these two specimens, and others from the adjacent regions, shows that the ray-achenes may be hispidulous at summit

or glabrate and have the pappus of a few short white bristles or wanting. All these plants differ constantly from the other species in the reduction of ray pappus, as well as the other floral and foliage characters emphasized in our key. Consequently, having studied abundant material of the group and realizing the constancy and importance of particular floral characters, especially those of the pappus, we raise var. *semicalva* to specific rank.

NEW MEXICO: side of mountains, at copper mines, Oct., 1851, *Charles Wright*, no. 1,268 (TYPE); Valley of Coppermine Creek, Aug., Oct., 1851, *Charles Wright*, no. 1,267; altitude 7,000 feet, White Mountains, Aug. 12, 1897, *E. O. Wooton*, no. 501; Forest Nursery, Fort Bayard, Oct. 1, 1905, *J. C. Blumer*, no. 102. ARIZONA: altitude 8,100 feet, Grand View, Chiricahua Mts., Sept. 10, 1907, *J. C. Blumer*, no. 1,652; in shade, sandy alluvium, near Cedar Gulch, Paradise, altitude 5,300 feet, Chiricahua Mts., Sept. 21, 1907, *J. C. Blumer*, no. 1,713; sandy washes, Mule Mts., Oct. 8, 1910, *L. N. Goodding*, no. 924. CHIHUAHUA: altitude 7,500 feet, near Colonia Garcia in the Sierra Madres, Aug. 7, 1899, *C. H. T. Townsend & C. M. Barber*, no. 241; near Colonia Garcia, Aug. 1–20, 1899, *E. W. Nelson*, no. 6,212; along road to Porral, near San Julian, altitude 7,000–8,000 feet, Sept. 8, 1898, *E. W. Nelson*, no. 4,936. SAN LUIS POTOSI: in arenosis circa urbem, Sept., 1876, *J. G. Shaffner*, no. 234.

GRAY HERBARIUM.

## A NEW DIGITARIA FROM NEW HAMPSHIRE

M. L. FERNALD

THE only indigenous species of *Digitaria* heretofore recognized as far north as New England is *D. filiformis* (L.) Koeler, which reaches its northern limit in the gravelly and sandy regions of northern Essex County, Massachusetts, and southern Hillsboro County, New Hampshire. Slightly to the north, however, in northeastern Hillsboro County, the late F. W. Batchelder discovered in September, 1901, a remarkable species which he distributed to various herbaria as *Syntherisma filiforme* (L.) Nash (= *D. filiformis*) but which, except for its superficial resemblance, is quite distinct from the latter species. A detailed review of all the North American species of the genus clearly shows that Mr. Batchelder's plant is a unique species as nearly allied to the two local species of Florida, *D. gracillima*<sup>1</sup>

<sup>1</sup>DIGITARIA *gracillima* (Scribn.), n. comb. *Panicum gracillimum* Scribn. Bull. Torr. Bot. Cl. xxiii. 146 (1896). *Syntherisma gracillima* [um] (Scribn.) Nash, Bull. Torr. Bot. Cl. xxv. 295 (1898).